

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) An isolated and purified nucleic acid molecule that encodes a mammalian histamine H4 receptor protein, said nucleic acid molecule comprising a member selected from the group consisting of:

~~(a) a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 390 of SEQ ID NO:2;~~

~~(b) a nucleic acid molecule which is complementary to the polynucleotide of (a);~~

~~(c) a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (a) or (b);~~

~~(d) a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of (a);~~

~~(e) a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 391 of SEQ ID NO:8;~~

~~(f) a nucleic acid molecule which is complementary to the polynucleotide of (e);~~

~~(g) a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (f) or (e);~~

~~(h) a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of (e);~~

(i) (a) a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 391 of SEQ ID NO:9;

(i) (b) a nucleic acid molecule which is complementary to the polynucleotide of (a) (i);

~~(k)~~(c) a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of (a) or ~~(b)~~ ~~(i)~~ or ~~(j)~~; and

~~(l)~~ (d) a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of (a). ~~(i)~~;

~~(m)~~—a nucleic acid molecule encoding a protein having at least 70% identity to a polypeptide comprising amino acids 1 to 389 of SEQ ID NO:10;

~~(n)~~—a nucleic acid molecule which is complementary to the polynucleotide of ~~(m)~~;

~~(o)~~—a nucleic acid molecule comprising at least 15 sequential bases of the polynucleotide of ~~(m)~~ or ~~(n)~~; and

~~(p)~~—a nucleic acid molecule that hybridizes under stringent conditions to the polynucleotide molecule of ~~(m)~~.

2. (original) The nucleic acid molecule of claim 1 wherein the polynucleotide is RNA.

3. (original) The nucleic acid molecule of claim 1 wherein the polynucleotide is DNA.

4. (currently amended) The isolated and purified nucleic acid molecule of claim 1, having a nucleotide sequence ~~selected from a group consisting of: (SEQ ID NO:1), (SEQ ID NO:5), (SEQ ID NO:6), and (SEQ ID NO:7).~~

5. (original) The isolated and purified nucleic acid molecule of claim 1, wherein said nucleic acid molecule is genomic DNA.

6. (currently amended) An expression vector for expression of a mammalian histamine H4 receptor protein in a recombinant host, wherein said vector contains a nucleic acid sequence encoding a mammalian histamine H4 receptor protein having an amino acid sequence of SEQ ID NO:9.

7. (currently amended) The expression vector of claim 6, wherein the expression vector contains a nucleic acid molecule encoding a mammalian histamine H4 receptor protein having a nucleotide sequence ~~selected from a group consisting of: (SEQ ID NO:1), (SEQ ID NO:5), (SEQ ID NO:6), or (SEQ ID NO:7).~~

8. (currently amended) The expression vector of claim 6, wherein the expression vector contains genomic DNA encoding a said mammalian histamine H4 receptor protein.

9. (currently amended) A recombinant host cell containing a recombinantly cloned nucleic acid molecule encoding a mammalian histamine H4 receptor protein having an amino acid sequence of SEQ ID NO:9.

10. (currently amended) The recombinant host cell of claim 9, wherein said nucleic acid molecule has a nucleotide sequence ~~selected from a group consisting of: (SEQ ID NO:1), (SEQ ID NO:5), (SEQ ID NO:6), and (SEQ ID NO:7).~~

11. (original) The recombinant host cell of claim 9, wherein said cloned nucleic acid molecule is genomic DNA.

12. (currently amended) A substantially pure histamine H4 receptor encoded by the nucleic acid molecule of claim 1 ~~protein in substantially pure form that functions as mammalian histamine H4 receptor protein.~~

13. (currently amended) The protein according to claim 12, having an amino acid sequence ~~selected from a group consisting of: (SEQ ID NO:2), (SEQ ID NO:8), (SEQ ID NO:9), and (SEQ ID NO:10).~~

14-15. (canceled)

16. (original) A process for expression of mammalian histamine H4 receptor protein in a recombinant host cell, comprising:

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- (a) transferring the expression vector of Claim 6 into suitable host cells; and
- (b) culturing the host cells of step (a) under conditions which allow expression of the mammalian histamine H4 receptor protein from the expression vector.

17-25. (canceled)